

What is claimed is:

1. A method for generating ternary spreading codes for use in an apparatus for generating the ternary spreading codes with zero correlation duration, the method comprising the steps of:

(a) generating ternary zero correlation duration preferred pair codes, in which the zero correlation duration of $(0.75N+1)$ chips is retained, by expanding an N chip period of a code, N being a natural number; and

(b) generating a plurality of ternary zero correlation duration code sets having zero correlation characteristic equal to or less than $(0.75N+1)$ chips by shifting the generated ternary zero correlation duration preferred pair codes in chips.

2. The method as recited in claim 1, wherein the step (a) includes the steps of:

(a1) forming a basic spreading code from an initial basic matrix;

(a2) expanding the period of the formed basic spreading code to generate one of the ternary zero correlation duration preferred pair codes having zero correlation characteristic of $(0.75N+1)$ chips with a predetermined times the period; and

(a3) inverting even terms of the generated one of the ternary zero correlation duration preferred pair codes to generated the other one of the ternary zero correlation

duration preferred pair codes.

3. The method as recited in claim 1, wherein the generated ternary spreading codes are used as an initial code
5 for synchronization acquisition related to a matched filter.

4. The method as recited in claim 1, wherein the generated ternary spreading codes are used for multiplexing of channels and chip synchronization between codes in a code
10 division multiple access (CDMA) system.

5. The method as recited in claim 1, wherein the generated ternary spreading codes are used in up-link of a cellular system to make the cellular system operate without
15 synchronization and are used in down-link of the cellular system to reduce multi-path due to quasi-synchronous operation duration.

6. The method as recited in claim 1, wherein the generated ternary spreading codes are expanded by generating a
20 expanding matrix and using each row or a row in which some parts of signatures of each row are inverted.

7. The method as recited in claim 1, wherein the generated ternary spreading codes are used in a low power
25 consumption matched filter in which adders and multipliers, coupled to halves of zero tap coefficients of tap coefficients

in hardware implementation of despreading matched filter, are removed.

8. An apparatus for generating ternary spreading codes
5 with zero correlation duration, the apparatus comprising:

generating means for generating ternary zero correlation
duration preferred pair codes, in which the zero correlation
duration of $(0.75N+1)$ chips is retained, by expanding a code N
chip period of a code, N being a natural number; and

10 generating means for generating a plurality of ternary
zero correlation duration code sets having zero correlation
characteristic equal to or less than $(0.75N+1)$ chips by
shifting the generated ternary zero correlation duration
preferred pair codes in chips.

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9. The apparatus as recited in claim 8, wherein the
generation means for generating ternary zero correlation
duration preferred pair codes includes:

20 expanding means for expanding a period of a basic
spreading code that is formed from an initial basic matrix to
generate one of the ternary zero correlation duration
preferred pair codes having zero correlation characteristic of
 $(0.75N+1)$ chips with a predetermined times the period; and

25 generating means for inverting even terms of the
generated one of the ternary zero correlation duration
preferred pair codes to generate the other one of the ternary
zero correlation duration preferred pair codes.

10. The apparatus as recited in claim 8, wherein the generated ternary spreading code is used as an initial code for synchronization acquisition related to a matched filter.

5 11. The apparatus as recited in claim 8, wherein the generated ternary spreading codes are used for multiplexing of channels and chip synchronization between codes in a code division multiple access (CDMA) system.

10 12. The apparatus as recited in claim 8, wherein the generated ternary spreading codes are used in up-link of a cellular system to make the cellular system operate without synchronization and are used in down-link of the cellular system to reduce multi-path due to quasi-synchronous operation duration.

15 13. The apparatus as recited in claim 8, wherein the generated ternary spreading codes are expanded by generating an expanding matrix and using each row or a row in which some parts of signatures of each row are inverted.

20 14. The apparatus as recited in claim 8, wherein the generated ternary spreading codes are used in a low power consumption matched filter in which adders and multipliers, coupled to halves of zero tap coefficients of tap coefficients in hardware implementation of despreading matched filter, are removed.

15. A computer readable recording medium for recording a program for implementing, in an apparatus having a processor for generating ternary spreading codes with zero correlation duration the functions of:

(a) generating ternary zero correlation duration preferred pair codes, in which the zero correlation duration of $(0.75N+1)$ chips is retained, by expanding a N chip code period, N being a natural number; and

(b) generating a plurality of ternary zero correlation duration code sets having zero correlation characteristic equal to or less than $(0.75N+1)$ chips by shifting the generated ternary zero correlation duration preferred pair codes in chips.